

Remarks

The Office Action mailed September 22, 2004 has been carefully reviewed and the foregoing amendment has been made in consequence thereof.

Claims 1-23 are now pending in this application, of which claims 1, 11 and 17-23 have been amended. It is respectfully submitted that the pending claims define allowable subject matter.

Claims 18-23 have been amended to correct clerical errors in the dependent claim references so that claims 18-23 properly depend from independent claim 17.

The rejection of claims 1, 4, 11, 14 and 21 under 35 U.S.C. § 102(b) as being anticipated by Smoll (U.S. Patent No. 5,417,119) is respectfully traversed.

The Smoll '119 patent describes an electromagnetic flow meter for measuring the flow of blood in an extracorporeal circuit. The meter includes a transducer unit (A) having electromagnets (2a) and (2b), and an insert (B) having electrodes (5a) and (5b). An alternating-current drive signal is applied to the windings of the electromagnets, and the blood has the property of a conductor cutting through a magnetic field. Voltages are induced and output by the electrodes, and the generated voltages are proportional to the flow rate through the tube.

Amended claim 1 recites an electrical connector comprising "at least one body comprising a passageway for a flow of a conductive fluid," "a first conductive pin in fluid communication with said passageway," and "a second conductive pin in fluid communication with said passageway, wherein when an electrical signal is introduced to said first pin, said fluid serves as a conductive conduit between said first and second conductive pins when said conductive fluid flows through said passageway, whereby said electrical signal is carried to said second pin via said conductive fluid to detect a presence of the conductive fluid in said passageway."

The Smoll '119 patent neither describes nor suggests the connector of claim 1. The electrodes of Smoll serve only to output generated voltages, and neither of the electrodes introduces an electrical signal which is carried through a conductive fluid to the other electrode. Further, the Smoll '119 device is configured to detect the flow volume of blood in the insert (B), and not to detect the presence of blood in the insert (B). Smoll nowhere states or describes that using a conductive fluid to carry an electrical signal between contact pins would be desirable or advantageous.

Claim 1 is therefore submitted to be patentable over the Smoll '119 patent.

Claim 4 depends from claim 1, and when the recitations of claim 4 are considered in combination with the recitations of claim 1, claim 4 is likewise submitted to be patentable over the Smoll '119 patent.

Claim 11 recites an ink monitoring connector assembly comprising "at least one body comprising a passageway for a flow of a conductive ink fluid," "a first conductive pin having a first portion in fluid communication with said passageway and a second portion external to said body," and "a second conductive pin having a first portion in fluid communication with said passageway and a second portion external to said body, wherein an electrical circuit may be established through said conductive ink fluid to carry an electrical signal between said first portions of said first and second conductive pins through said conductive ink fluid when said second portions of said first and second pins are coupled to a sensing unit."

As noted above, the Smoll '119 patent describes an electromagnetic circuit wherein induced voltages are output with electrodes, and not an electrical circuit through a conductive fluid in which an electrical signal is carried through the conductive fluid between the electrodes. Moreover, the Smoll '119 patent nowhere describes conductive ink fluids, and nowhere suggests any desirability of monitoring the presence of conductive inks with the flow meter of the Smoll '119 patent.

Claim 11 is therefore submitted to be patentable over the Smoll '119 patent.

Claim 14 depends from claim 11, and when the recitations of claim 14 are considered in combination with the recitations of claim 11, claim 14 is likewise submitted to be patentable over the Smoll '119 patent.

Claim 17 recites an ink monitoring connector assembly comprising "a body assembly comprising a plurality of passageways for a flow of a conductive ink fluid," and "a first conductive pin and a second conductive pin associated with each passageway of said body assembly, each of said first and second pins including a first portion and a second portion, said first portion in fluid communication with said respective passageway and said second portion external to said body," "wherein an electrical circuit may be established through said conductive ink fluid to carry an electrical signal through said conductive ink fluid between said first portion of said conductive pins corresponding to each passageway of said body assembly when said second portions of said first and second pins are coupled to a sensing unit."

For the reasons set forth above, it is respectfully submitted that the flow meter of the '119 patent and the ink monitoring connector assembly of the present invention are fundamentally different in purpose and effect. The Smoll '119 patent is an electromagnetic device which reads induced voltages with electrodes, while the present invention employs an electrical signal carried through a conductive ink between first and second contact pins when the pins are connected to a sensing unit. The Smoll '119 patent nowhere describes conductive inks or a plurality of passages for conductive inks, and does not describe or suggest any desirability of carrying an electrical signal through a conductive ink as recited in claim 17.

Claim 17 is therefore submitted to be patentable over the Smoll '119 patent.

Claim 21 depends from claim 17, and when the recitations of claim 14 are considered in combination with the recitations of claim 11, claim 14 is likewise submitted to be patentable over the Smoll '119 patent.

For the reasons set forth above, Applicants respectfully request that the Section 102 rejection of claims 1, 4, 11, 14 and 21 as anticipated by the Smoll '119 patent be withdrawn.

The rejection of claims 1, 2, 9-12, 16, 17, 19 and 23 under 35 U.S.C. § 102(b) as being anticipated by Smoll (U.S. Patent No. 5,865,968) is respectfully traversed.

The Smoll '968 patent describes an electromagnetic blood pump which is used in combination with the transducer of the Smoll '119 patent to control the pump. It is respectfully submitted that the Smoll '968 patent adds nothing to the teaching of the Smoll '119 patent with respect to the instant invention.

Due to the fundamental differences between the present invention and the electromagnetic transducer described in the Smoll '119 patent and incorporated into the Smoll '968 patent, as set forth in detail above, independent claims 1, 11, and 17 are submitted to be patentable over the Smoll '968 patent.

Dependent claims 2, 9-10, 12, 16, 19 and 23, when considered in combination with the recitations of their respective independent claims, are likewise submitted to be patentable over the Smoll '968 patent.

For the reasons set forth above, Applicants respectfully request that the Section 102 rejection of claims 1, 2, 9-12, 16, 17, 19 and 23 as anticipated by the Smoll '968 patent be withdrawn.

The rejection of claims 6 and 18 under 35 U.S.C. § 103(a) as being unpatentable over Smoll (U.S. Patent No. 5,417,119) in view of Sugiyama (U.S. Patent No. 6,568,790) is respectfully traversed.

Sugiyama describes a printing system having an ink detection sensor (17), but Sugiyama nowhere describes how ink is detected by the sensor (17). Thus, Sugiyama does not surmount the deficiencies of the Smoll '119 patent with respect to the instant invention, and Sugiyama

provides no teaching or suggestion regarding how the teaching of the Smoll '119 patent could be modified in a manner that would result in the present invention.

It is respectfully submitted that a prima facie case of obviousness has not been established. The rejection combines an electromagnetic transducer for measuring blood flow and volume (the Smoll '119 patent) with a printing system patent (Sugiyama) which generically identifies an ink detection sensor without explanation of the sensor's construction or operation. There is no apparent link between the teaching of the references that lead one of ordinary skill in the art at the time that the invention was made to combine the teaching of the Smoll '119 patent and Sugiyama to provide an ink detection assembly. Especially in light of the fundamental differences between the Smoll electromagnetic transducer and the present invention, even if one were to combine the teaching of the references, the present invention would not result. Collectively, each of the Smoll '119 patent and Sugiyama, considered separately and in combination, fail to describe or suggest each of the recitations of independent claims 1 and 17.

Claims 1 and 17 are therefore submitted to be patentable over the Smoll '119 patent in view of Sugiyama, and when the recitations of claims 6 and 18 are considered in combination with the recitations of claims 1 and 17, respectively, claims 6 and 18 are submitted to be patentable over the Smoll '119 patent in view of Sugiyama.

For the reasons set forth above, Applicants respectfully request that the Section 102 rejection of claims 6 and 18 as unpatentable over the Smoll '119 patent in view of Sugiyama be withdrawn.

The rejection of claims 5, 15 and 22 under 35 U.S.C. § 103(a) as being unpatentable over Smoll (U.S. Patent No. 5,417,119) in view of Wada (U.S. Patent No. 5,269,191) is respectfully traversed.

Wada describes an electromagnetic flow meter, and Wada does not cure the deficiencies of the Smoll '119 patent with respect to the instant invention. Wada provides no teaching or

suggestion regarding how the teaching of the Smoll '119 patent could be modified in a manner that would result in the present invention.

It is respectfully submitted that a prima facie case of obviousness has not been established. The rejection combines an electromagnetic transducer for measuring blood flow and volume (the Smoll '119 patent) with an electromagnetic flowmeter (Wada), in comparison to the present invention which does not rely on electromagnetic principles to operate. There is no apparent link between the teaching of the references that lead one of ordinary skill in the art at the time that the invention was made to combine the teaching of the Smoll '119 patent and Wada. Especially in light of the fundamental differences between the Smoll electromagnetic transducer and the present invention, even if one were to combine the teaching of the references, the present invention would not result. Collectively, each of the Smoll '119 patent and Wada, considered separately and in combination, fail to describe or suggest each of the recitations of independent claims 1 and 17.

Claims 1 and 17 are therefore submitted to be patentable over the Smoll '119 patent in view of Wada, and when the recitations of claims 5, 10 and 22 are considered in combination with the respective recitations of claims 1 and 17, claims 5, 10 and 22 are submitted to be patentable over the Smoll '119 patent in view of Wada.

For the reasons set forth above, Applicants respectfully request that the Section 102 rejection of claims 5, 15 and 22 as unpatentable over Smoll in view of Wada be withdrawn.

The objection to claims 3, 13 and 20 as dependent upon rejected base claims is respectfully traversed. For the reasons set forth above, the base claims (i.e., claims 1, 11, and 17) for claims 3, 13 and 20, respectively, are submitted to be patentable over the cited art. When the recitations of claims 3, 13 and 20 are considered in combination with the recitations of their respective base claims, claims 3, 13 and 20 are likewise submitted to be patentable over the cited art.

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Applicants accordingly request withdrawal of the objection to claims 3, 13 and 20.

In view of the foregoing amendments and remarks, all the claims now active in this application are believed to be in condition for allowance. Reconsideration and favorable action is respectfully solicited.

Respectfully Submitted,



Bruce T. Atkins
Registration No. 43,476
ARMSTRONG TEASDALE LLP
One Metropolitan Square, Suite 2600
St. Louis, Missouri 63102-2740
(314) 621-5070